Storage for School Lunch Food and Supplies

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Contents

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Storage for School Lunch Food and Supplies

Well-planned storage for food and supplies makes for efficient and economical school lunch operation. Proper storage of food helps to protect the health of the children who eat lunches at school, to conserve food values, and to prevent waste. Furthermore, storage facilities that are well-planned in relation to work centers save time and energy of workers and so reduce labor costs.

In recent studies of school lunch programs, storage problems were found to be numerous. In some schools storerooms were too small, or located too far from the kitchen. On the other hand, a few schools had storerooms larger than necessary. Refrigerator space was sometimes too limited for proper storage of perishable foods. Storage space for small equipment was not always conveniently arranged at the work centers where it was used. Often workers did not have a suitable place for their street clothes and other personal belongings. Where space was satisfactory, it was not always used to best advantage.

Problems such as these need careful consideration in planning lay-out of space for new school lunchrooms, in remodeling or enlarging lunchrooms already in operation, or in deciding upon management practices that will make most efficient use of the storeroom. This publication is intended to direct attention to storage problems, give help in planning and evaluating storage facilities, and serve as a guide to accepted practices in storage management. The contents may well be used as an outline for fuller discussion by those interested in the preparation and serving of school lunches.

Types of Storage Space Needed

Different kinds of food, supplies, and small equipment used in preparing and serving school lunches call for different storage arrangements. A storeroom is needed for staple food supplies and canned goods, usually called "dry stores." Refrigerated storage is essential for perishable foods such as milk, meat, butter, eggs, and cheese. Paper goods and miscellaneous supplies may be kept in the storeroom with food supplies, but a separate place outside the storeroom may be more convenient. Also there is less likelihood of damage by mice and insects if these articles are stored away from the food supplies.

Plans should include also a place separate from the food storage for cleaning equipment and supplies, and an enclosed place for temporarily holding garbage and trash containers and empty crates. Convenient storage for kitchen utensils, small equipment, and tableware is another essential. Workers also need a place outside the storeroom or kitchen for their personal belongings.

Storeroom for Staples and Canned Goods

Space requirements

The amount of space needed in the storeroom depends upon the kind of menus and number of meals served, and the buying practices. In planning consider future

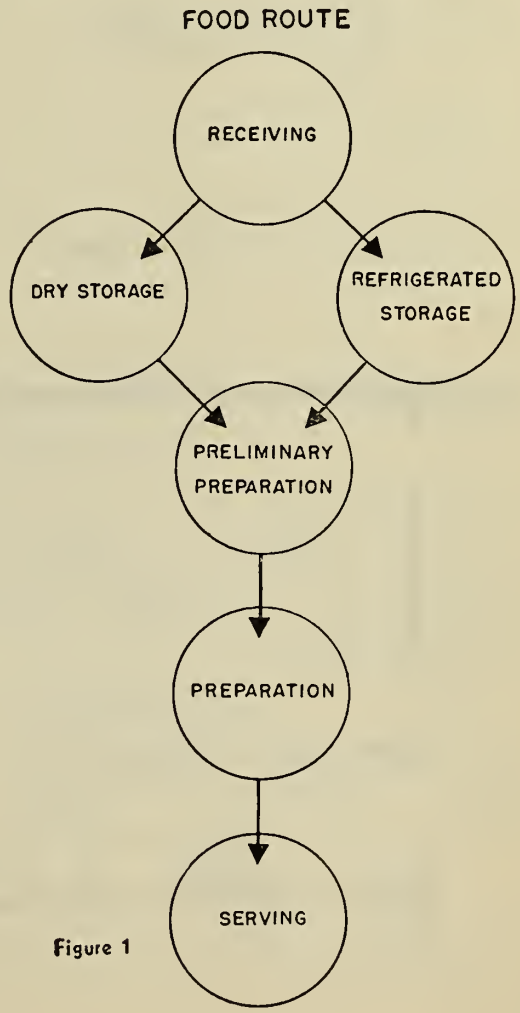


Figure 1

requirements as well as current needs. Some schools lack sufficient storage space because of growth of the school lunch program or changes in methods of operation not anticipated at time of building.

A general rule is to allow one-sixth to one-fifth as much space for the storeroom as for the school lunch kitchen provided the kitchen meets the usual recommendations, which are 1½ square feet for 75 to 350 meals served or 1 square foot for 350 to 500. This provides for storage of wholesale quantities of food, although additional space will be needed if unusually large stocks are carried. Storage requirements for food commodities distributed by the Federal Government and for school lunch foods canned in community canneries should not be overlooked.

Location of the storeroom

Ideally, the storeroom is so located in relation to the receiving center and kitchen work centers that the "food preparation route" is as short and direct as practicable. This route is the course along which the food travels from the time it is received until it is served. The steps in the food route, shown in figure 1, are: (1) Receiving, (2) storing, (3) preliminary preparation such as washing and peeling vegetables, (4) preparation which includes cooking, baking, or cold preparation, (5) serving.

The floor plans in figure 2 illustrate well-located storerooms.

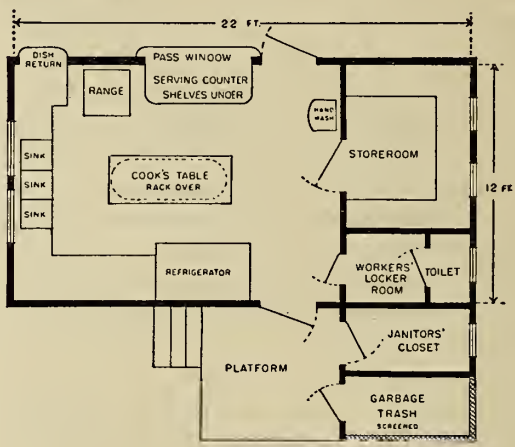
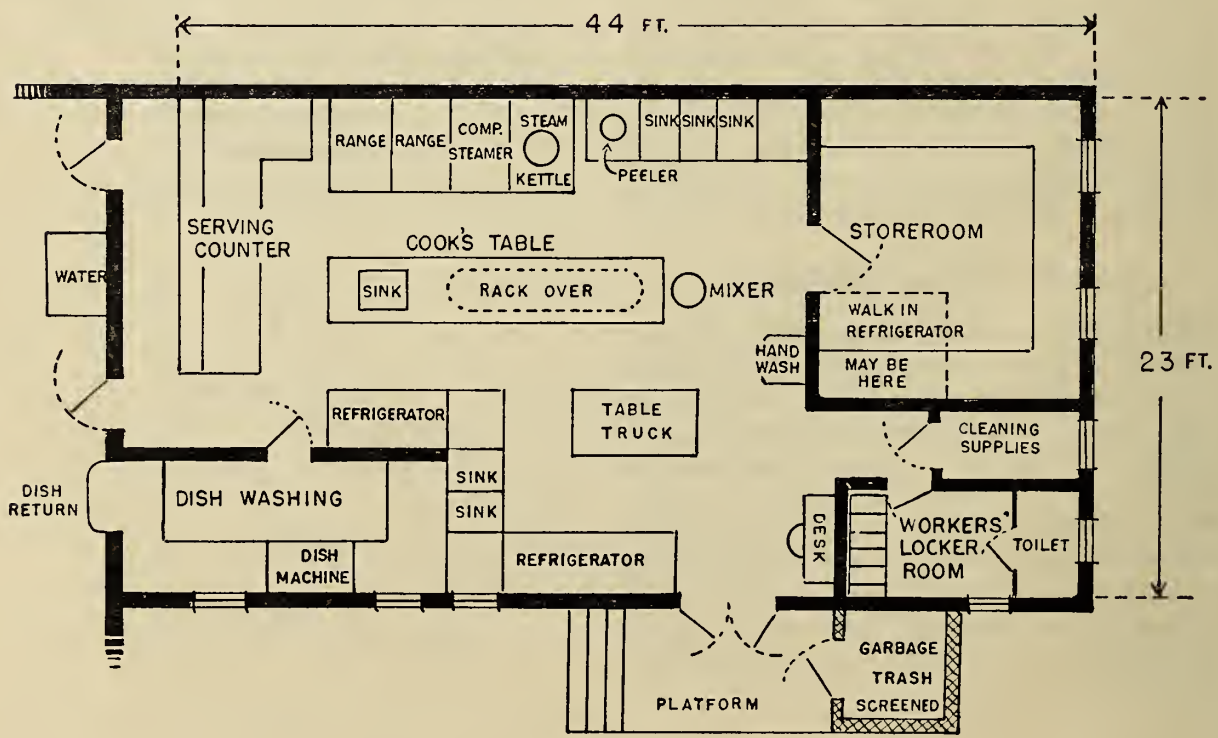


Figure 2.—School lunch lay-outs for large and small programs, illustrating good storage arrangement.

SKETCHES (NOT ARCHITECTURAL DRAWINGS)



Characteristics of a well-planned storeroom

Below is a list of desirable features for a room to be used for storage of staples and canned foods. It will serve as a check list in planning or in evaluating storage space now in use.

Room free of machinery, ventilating ducts, heating and water pipes . . . protected against rats and mice . . . screened to keep out flies.

Walls of plaster or glazed hollow tile.

Concrete floor with suitable drain.

Only one door which should open into the kitchen to permit better control of deliveries and withdrawals.

Secure locks on doors and windows.

Good ventilation, provided by louvers or by mechanical means.

Provision for keeping temperature at all times less than 70° F. but well above freezing.

Sufficient light, natural or artificial, so that supplies stored in any part of the room can be seen easily.

Equipment for the storeroom

A low table or bench.—Placed in the receiving area or just inside the storeroom, this is useful when checking deliveries and unpacking or sorting supplies.

Scales.—These are needed for checking weights of goods received.

Shelving.—Built in against the walls, for canned and packaged goods. Shelves should be of strong material and well-supported to bear heavy weight (fig. 3). In planning width and height of shelves, consider the dimensions of containers to be stored. Shelves 14 to 16 inches wide will hold two rows of No. 10 cans or three rows of No. 2½ cans, with 2 inches between the wall and the back row of cans and space between the cans for circulation of air. A 12-inch space between the higher shelves is sufficient. Between lower shelves 18 inches is recommended to provide room enough for the larger articles to be stored.

In a large storeroom, shelves opening on both sides and built along the center use floor space that would otherwise be wasted. This type of shelving can be wider than shelves reached from one side only.

A low, slatted platform on wheels for handling, moving, or short-time storage of fruits and vegetables in sacks or crates (fig. 4).

Slatted bins with wire mesh lining.—These are recommended for potatoes and dry onions. They are filled from the top and the vegetables removed from the bottom (fig. 5).

Cans of galvanized metal, plainly labeled, for dry beans, rice, flour, and sugar. With wire mesh covers they are suitable also for most vegetables. The cans may be mounted on low platforms with casters for ease in handling (fig. 6). Another plan is to hang the cans by one handle on wall hooks in a tilted position (fig. 7). A broad shelf fastened to the wall below supports the weight. A scoop or side-handled pan in each can is convenient for dipping out such foods as beans and cereals. Or for larger quantities the contents may be poured from the can by unhooking the can from the wall.

Keeping the storeroom clean

Include the storeroom in the regular cleaning schedule—cleanliness helps prevent growth of molds and other organisms that cause spoilage of foods. Scrub the floor, and keep walls and shelves clean. Don't allow dirt to accumulate in dark corners. If food is spilled on floor or shelves wipe it up immediately. Remove any spoiled food promptly.

Provide a container in the storeroom for trash. Empty the container often and wash and spray it with insecticide.

Spray the storeroom regularly to keep it free from insects which spread disease and cause waste by damaging food. A 5-percent solution of DDT is a satisfactory insecticide. When spraying, be sure to have all food covered so the spray solution cannot come in contact with it. Control of rats and mice is also necessary to keep the storeroom clean and sanitary.

Preventing accidents in the storeroom

To help prevent accidents in the storeroom, take the following precautions:

- Keep containers, boxes, and other articles off the floor so that workers will not trip over them.
- See that shelves are strong, level, and wide enough so that canned goods and other articles cannot slip off.
- Place the heavier articles on lower shelves where workers can reach them easily. Provide sturdy steps for reaching higher shelves.
- Keep floors in good repair, clean, and free of grease and other slippery substances.
- Have the storeroom well-lighted.

Safeguarding supplies in storage

Keep the storeroom locked. Let the person who is responsible for the food supplies keep the key.

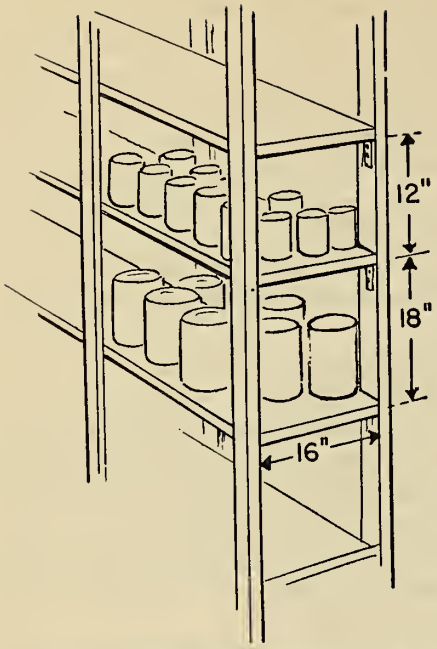


Figure 3.—Sturdy shelves, spaced to fit different sized containers.

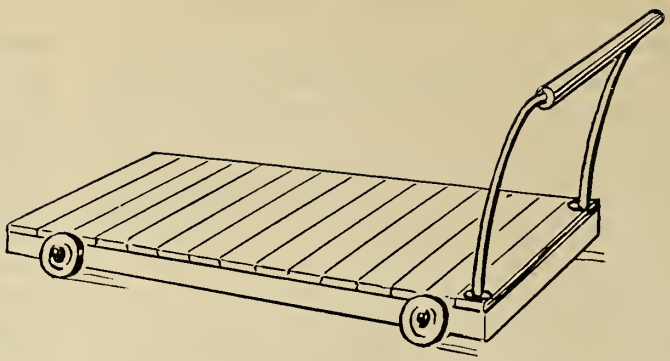


Figure 4.—Platform on wheels for handling crates and sacks.

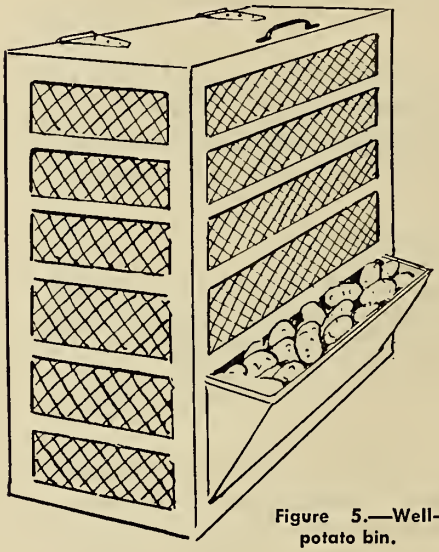


Figure 5.—Well-ventilated potato bin.

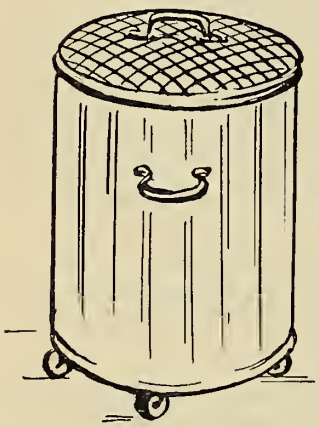


Figure 6.—Galvanized can with wire mesh cover, suitable for potatoes and root vegetables.

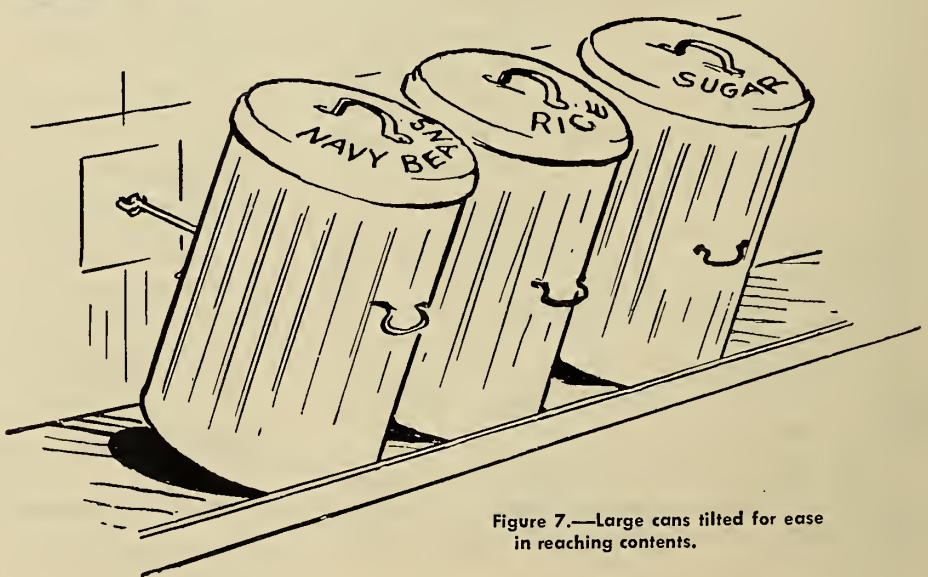


Figure 7.—Large cans tilted for ease in reaching contents.

Keeping storage records

When foods and supplies are delivered, check with the purchase order for agreement on quality, quantity, and price. The name or initials of the person who receives, weighs or counts, checks, and unpacks the goods should be recorded on the delivery slip or on a simple record form kept for that purpose.

A good plan is to mark canned goods with the date they are received. Store new shipments behind or separate from older goods of the same kind so the older will be used first. It is best not to hold canned goods for more than a year.

A monthly inventory showing the kind, quantity, and value of food on hand is recommended. Such a record is useful in calculating food costs per meal and is needed when computing profit and loss. It serves as a check on supplies that are running low, and helps detect loss from theft.

Grouping like foods together on the shelves when they are stored will save time and labor in taking the inventory.

A memorandum pad in the storeroom for jotting down items that need to be ordered is a convenience.

For the inventory a printed or mimeographed form, with or without a listing of the different kinds of food stocked, may be used. Below is a suggested form.

Food Inventory

For month of _____ Date _____

Item [1]	Brand or kind [2]	Size	Quantity on hand	Unit price	Total value

[1] The names of food items usually stocked may he mimeographed on the form or the items on hand may he written in at the time the inventory is taken.

[2] In the hrand or kind column, for food items not purchased by the school lunch program, indicate source (as canning center, U. S. D. A., or other). Do not show a dollar value for these foods, as the total of the value column should represent the amount that the school lunch program has invested for the food on hand at the close of the month.

Refrigerated Storage

Refrigeration is essential for perishable foods from the time they are delivered until they are prepared and served. Left-over cooked foods need to be kept in a refrigerator until used in the next meal.

Refrigerating temperatures

For the refrigerator a temperature from 40° to 45° F. is generally satisfactory. The temperature should never go above 50°.

Frozen foods to be kept longer than a month require a storage temperature of 0° F. or below; for shorter periods, 15° to 0° is satisfactory. Once frozen foods have been thawed use them immediately. Never refreeze them. Bacteria grow rapidly in thawed foods and food poisoning may result.

Keep bulk ice cream at 5° to 10° F. for easy dipping. For brick ice cream a lower temperature is recommended.

Location of refrigerator

The refrigerator, like the storeroom for staples and canned foods, is best located as near work centers as possible so the food preparation route will be short and direct. (See fig. 1.) In this way time and energy of workers are saved.

Amount and kind of refrigeration

The amount and kind of refrigeration needed for the school lunch depends upon the number of meals served daily, menus used, and how often perishable foods are delivered. For example, if meat can be delivered regularly at about the time it is to be prepared and milk brought in iced a short time before serving, refrigerator space for these foods will not have to be provided.

For storing perishable foods exclusive of milk, refrigerators of the following sizes are generally recommended as minimum requirements:

Number of meals served daily:	Refrigerator capacity
75 to 150	20 cubic feet
150 to 250	45 cubic feet
250 to 350	60 cubic feet
350 to 500	90 cubic feet (2 refrigerators, each 45-foot capacity)

It is estimated that a 20-cubic-foot box is needed to refrigerate 240 half-pint bottles of milk in cases (cases 18¼ by 14¼ by 6½ inches, with 30 half-pint bottles in each case).

In programs serving fewer than 500, walk-in refrigerators usually are not recommended. The expense may

be justified, however, if fruits, vegetables, and other perishable or semiperishable foods can be bought to special advantage in large quantities, or if delivery service is such that bottled milk for drinking, and daily supplies of other perishables must be refrigerated.

If frozen foods are used, a freezer cabinet for holding them is essential unless they can be delivered at about the time they are to be used. In many communities freezer lockers in a commercial or cooperative plant can be rented. Schools that buy dressed meat in quantity direct from the producer at a saving have found this kind of frozen storage satisfactory.

Good care for the refrigerator

Defrost ice-maker type refrigerators when frost on the freezing unit is ¼ to ½ inch thick. Forced air models are usually self-defrosting.

Wipe up immediately any food spilled in the refrigerator.

Empty the refrigerator and wash it thoroughly inside and out once a week. Take out shelves, drip pans, ice trays, and containers; wash them with soapy water, rinse, and dry. Use warm water and baking soda (1 tablespoon baking soda dissolved in each quart of water) to wash inside of refrigerator, including freezing unit. Wash outside of cabinet with soapy water. Go over surfaces again with a cloth wrung out of clear water, then wipe dry.

Use the refrigerator only for perishable foods such as meat, fish, eggs, milk, butter, cheese. Even though ample space is available, hold these foods only a short time. For longer periods, meat and fish need frozen storage.

Pickles, jellies, and sweet spreads can be kept satisfactorily without refrigeration. Never put bananas in the refrigerator.

Remove the outside paper wrappings in which food has been delivered before putting it in the refrigerator, as wrappings may be contaminated with bacteria from handling.

Packaged lunch meats, cheese, and butter may be left in their waxed cartons to prevent exposure to air which dries them and may cause color changes. Other foods held in a mechanical refrigerator should be put into containers and covered to keep them from drying out and to prevent transfer of flavors from one food to another.

The refrigerator shelves nearest the freezing unit are coldest. Use them for the foods most likely to spoil—milk, meats, poultry, and fish—and for prepared dishes containing those foods.

It is part of good management to avoid left-overs; caring for them increases refrigeration costs as well as labor costs. In some schools teachers cooperate with the school lunch manager or cook by taking a count early every morning of the number of pupils who will have lunch at school. This report helps in planning quantities of food to be prepared. The use of standardized quantity recipes assures preparation of the number of servings needed.

Precautions in refrigerating warm food

Hot food should be cooled before it is put into the refrigerator, as a large quantity of hot food retains heat for a long period. The food at the center of the mass may remain warm enough to spoil even though refrigerated. In some cases failure to take proper precautions in refrigerating large quantities of warm cooked food has resulted in serious food poisoning. Furthermore, hot food raises the temperature of the refrigerator and may cause other foods to spoil. To cool food, place the container in a pan of cold water, or, preferably, cracked ice. Stir the food until it is below room temperature if possible. For quicker cooling of large quantities by this method, divide the food into several lots and use shallow containers instead of deep ones.

If a quantity of hot food must be placed in the refrigerator, take it out at frequent intervals and stir it so it will cool evenly throughout.

Storage Requirements for Specific Foods

Perishable fruits and vegetables

Daily delivery of perishable fruits and vegetables is desirable to reduce storage space requirements and save the labor of extra handling. If these products must be delivered in advance, a satisfactory storage place for them is important. Storage conditions that preserve the color, flavor, aroma and texture of fresh products help to preserve their nutritive value also. Wilted, shriveled, and damaged products have lost food value as well as flavor.

Examine all fresh fruits and vegetables before storing them. Remove spoiled products so they will not contaminate sound ones.

Keep fresh fruits and vegetables cool, moist, and well-ventilated. Never let them stand in the sun. To help keep them crisp, leafy vegetables and others that tend to wilt may be sprinkled with water.

Soft, fully ripe peaches, grapes, and tomatoes need refrigeration at 40° to 50° F., as they spoil quickly.

Potatoes, onions, and root vegetables

Semiperishable vegetables, such as potatoes, onions, carrots, and beets, keep well for some time if properly stored. Unless the right storage conditions can be provided, it is best to buy these in limited quantities.

Potatoes, beets, and carrots need a cool, moist, well-ventilated storage place. The best temperature for these vegetables is 45° to 50° F. Potatoes harvested in the fall keep better than early potatoes. If held at a temperature close to freezing, potatoes develop an undesirable sweet taste. If stored in the light they are likely to turn green; in a warm room they will sprout. Beets and carrots are best for storage when they are full grown but not too old.

Onions need a cool, dry storage place (32° to 50° F.).

For parsnips a cold temperature is best—keeping them just above freezing (about 34° F.) for a few weeks improves their flavor.

Sweetpotatoes should be dried out thoroughly and "cured" in a warm place before they are stored. Storage at about 55° to 60° is best. If bruised or improperly cured, sweetpotatoes spoil quickly.

Canned foods

Canned foods need dry, well-ventilated storage, preferably under 70° F. Stored at high temperatures, these foods lose both vitamin content and flavor. If canned foods freeze, the texture may be damaged. A dark storage place is best for foods canned in glass jars, as light changes the color of some foods, making them unappetizing in appearance though not unsafe to eat.

Keep evaporated milk in the coolest part of the storeroom. Invert cases or cans at least once every 30 days to prevent separation of the butterfat. Take care that the milk does not freeze. Freezing causes a curdled appearance though it does not otherwise harm the milk.

Inspect canned goods often for swells and leaks. Destroy canned food if can leaks, if end of can bulges, if liquid spurts out when can is opened, or if the food has an unusual odor. These are signs of spoilage.

Dried fruits

Dried fruits will keep satisfactorily for some time in tightly covered containers in a dry storeroom, preferably not above 70° F. At higher temperatures they lose sulfur dioxide, which is used in the drying process for most fruits and has a preservative effect.

If dried fruits must be held during summer vacation or for other long periods in warm weather, other storage arrangements will be needed. Raisins keep best at about 60° F. and other dried fruits at refrigeration temperatures from 32° to 45°. Dried apples, apricots, peaches, pears, and figs may be stored successfully below freezing.

A fairly dry atmosphere is needed to keep dried fruits from molding. The relative humidity should not be over 50 percent for raisins or over 55 percent for other fruits.

As a precaution against insect infestation dried fruits that have been exposed to the air under improper storage conditions can be heated for several hours in an oven at a temperature of 145° to 150° F., with the oven door open. The fruit should then be stored at the recommended temperature in tightly covered containers of glass, tin, or cellophane. If dried fruit has become infested with insects, however, heat treatment will not make it fit for use.

Dry milk and dried egg

Unopened packages of dry milk may be stored at room temperature, but preferably not above 75° F. For dried egg a temperature not above 60° is better—keep it in the refrigerator if there is room. So far as possible, open only the quantity of these products needed at one time. If any is left, store it in a tightly covered can or jar in the refrigerator. Unless tightly covered, dry milk and dried egg absorb odors, take up moisture, and become lumpy.

Storage for Equipment and Supplies

Small equipment

For efficient operation, keep small equipment at the work center where it is used. If the same piece of equipment must be used at more than one center in a series of food-preparation processes, keep it at the place where it is used first. The purchase of duplicates of certain small articles is often justified by the time saved.

Store small equipment often used by the cook where it can be easily seen and reached. A convenient arrangement is to keep large pots and pans and mixing bowls on a shelf under the cook's table, with mixing spoons, beaters, and other small equipment within easy reach on a rack over the table (fig. 8).

Store heavy utensils as near the level of the working surface as possible to avoid heavy lifting.

Keep sharp knives in a special rack within easy reaching distance of the center where they are used (fig. 9.) The knife rack protects the sharp edges and helps prevent cut fingers.

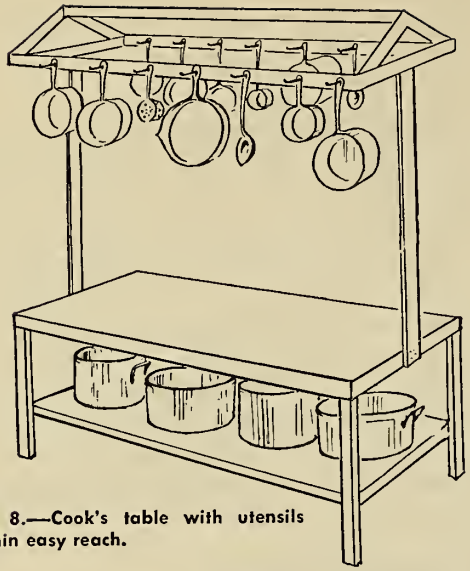


Figure 8.—Cook's table with utensils within easy reach.

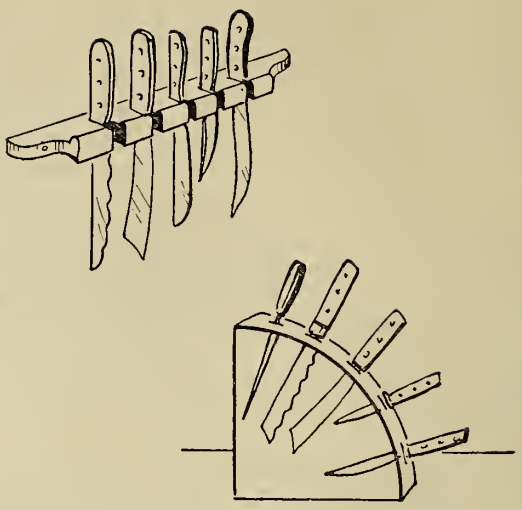


Figure 9.—Racks to help keep knife blades sharp, and to protect workers.

Figure 10.—Shelf divided for better use of space.

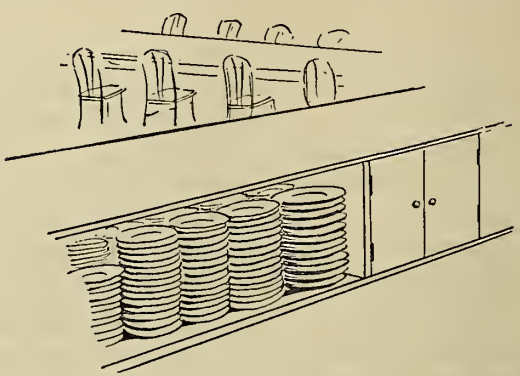


Figure 12.—Convenient storage for dishes under serving counter.

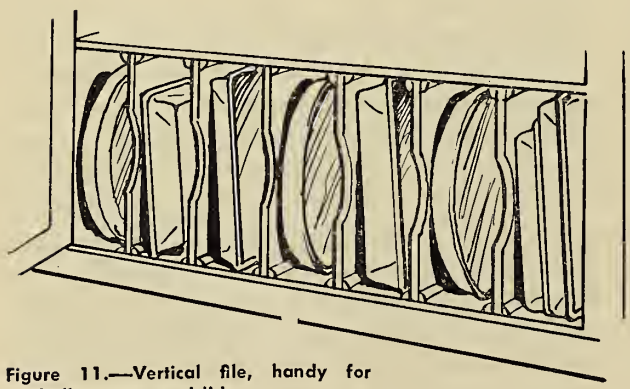
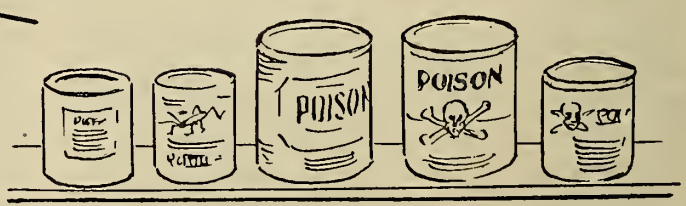


Figure 11.—Vertical file, handy for shallow pans and lids.

Figure 13.—Insecticides on separate shelf, away from food. Cans plainly labeled.



Keep large pans and paring knives at the sink where vegetables are washed and trimmed. Miscellaneous small equipment may be kept in drawers.

Storage space can often be made more useful by dividing drawers and shelves into units sized to fit the utensils to be stored. For example, small articles may be placed on shallow shelves (fig. 10). Lids and baking sheets fit conveniently into the vertical-file type of space (fig. 11).

A shelf under the soiled-dish table provides a suitable place for storing dishwashing baskets.

Tableware

Keep dishes, glassware, and silver in a place convenient to both the dishwashing unit and the serving counter. Store clean salad plates near the place where salads are made and dessert dishes where desserts are served.

Methods of storing eating utensils are usually regulated by State or local sanitary codes. Dish cabinets should be high enough above the floor to be away from the dust. Often the cabinets are built under the serving counter (fig. 12). For enclosed cabinets, sliding doors that are not in the way when opened are recommended. Open cupboards, if permitted by sanitary codes, are often preferred for the dishes that are used every day.

To save space, stack together plates, saucers, and bowls of the same size. Most cups stack conveniently in twos. Glasses may be kept on clean trays near the water cooler. Trays, stacked no higher than 18 inches, are usually kept on a table near the serving counter or on a portable truck.

Towels and uniforms

Keep clean uniforms and towels, folded and neatly stacked, in drawers or on shelves. Hampers are needed for soiled articles.

Cleaning supplies and insecticides

Store cleaning supplies and insecticides apart from food and dishes. Mops, mop buckets, and brooms need a well-ventilated storage. Most insecticides are poisonous—label them plainly and handle them with care (fig. 13). A closed cupboard in a closet used for the cleaning supplies is a good place to keep them.

Paper goods

Keep paper goods such as cups, plates, and straws in sanitary cartons, preferably those in which they are delivered. Store them in a clean, dry place protected from insects and rodents.

Reserve supplies

Space is usually needed for reserve supplies of dishes and utensils and extra parts for equipment. Such items may be kept in the storeroom. However, avoid cluttering this room with unessential articles.

Garbage and trash containers

Provide a screened-in space for temporarily holding garbage and trash containers and empty crates. Garbage containers should always be kept tightly covered. The size of this space will depend on the frequency of removal of garbage and trash. If cans are to be loaded on a truck, a screened space on the delivery platform on the back porch is suitable (fig. 2).

Workers' Personal Belongings

The storeroom is not a suitable dressing room. A separate room is needed where workers may change from street clothes to uniforms and where they may keep their personal belongings. A room convenient to the kitchen that the workers enter without going into the kitchen is desirable. Individual lockers for personal belongings are recommended.

OTHER SCHOOL LUNCH PUBLICATIONS

The following publications have been issued especially for the use of supervisors of school lunchrooms. All requests for free copies of these bulletins should be sent to the Information Branch, Production and Marketing Administration, U. S. Department of Agriculture, Washington 25, D. C.

School Lunch Recipes for 100. PA-18. Set of 77 file cards, 5 by 8 inches. (Free distribution limited to persons operating school lunch programs; others may purchase copies from the Government Printing Office, Washington 25, D. C., at $1.00 per set.)

National School Lunch Program. PA-19, 4 pp.

School Lunch Recipes Using Potatoes. PA-36, 31 pp.

School Lunch Recipes Using Nonfat Dry Milk. PA-44, 16 pp.

Quantities of Food for Serving School Lunches. PA-45, 18 pp.

A Yardstick for School Lunches. PA-50, 30 pp.

Estimating the Cost of Food for a School Lunch. PA-53, 12 pp.

School Lunch Recipes Using Dried Fruits. PA-57, 7 pp.

School Lunch Recipes Using Dried Whole Eggs. PA-58, 9 pp.

Small Equipment for the School Lunch. PA-59, 8 pp.

Planning and Equipping School Lunchrooms. PA-60, 19 pp.

Increasing the Efficiency of the School Lunch Kitchen. PA-61, 23 pp.

School Lunch Recipes Using Fish. PA-66, 8 pp.

Handbook for Workers in School-Lunch Programs with Special Reference to Volunteer Service. NFC-3, 30 pp.

Planning the School Lunchroom. 9 pp.

U. S. GOVERNMENT PRINTING OFFICE: 1949